

Water resources for the future

Water is vital for life

All living things need water to survive. People rely on water not only for drinking and for personal hygiene but also for many other purposes:

- around our homes, for cooking, washing and cleaning;
- in our gardens, to water plants;
- on farms, to water crops, to clean equipment, and for animals to drink;
- in offices, schools, universities and hospitals, for cooking and cleaning;
- in commerce and industry, to help with manufacturing.

All of the water we use is taken from streams, rivers or water-bearing rocks below the ground (aquifers). Water in the environment – in streams, rivers and wetlands – serves many other purposes. It allows plants to grow and keeps

fish, insects and mammals healthy. It also gives people pleasure in many ways. We like the appearance of rivers and streams in the landscape, and many of us enjoy fishing, boating, canoeing or just walking by rivers. Our use of water needs to safeguard all of these benefits.

A water resources strategy for the South West Region

The Government has given the Environment Agency the task of planning our use of water. As part of this process, we have developed a new water resources strategy for our South West Region. At the same time we are publishing seven other strategies for the rest of England and Wales, as well as a national strategy providing an overview. This leaflet summarises the strategy for the South West Region.

The Region, shown in Figure 1, comprises the whole of the south-west peninsula, together with the area from the Cotswolds in Gloucestershire, across Salisbury Plain to the

Figure 1 South West Region

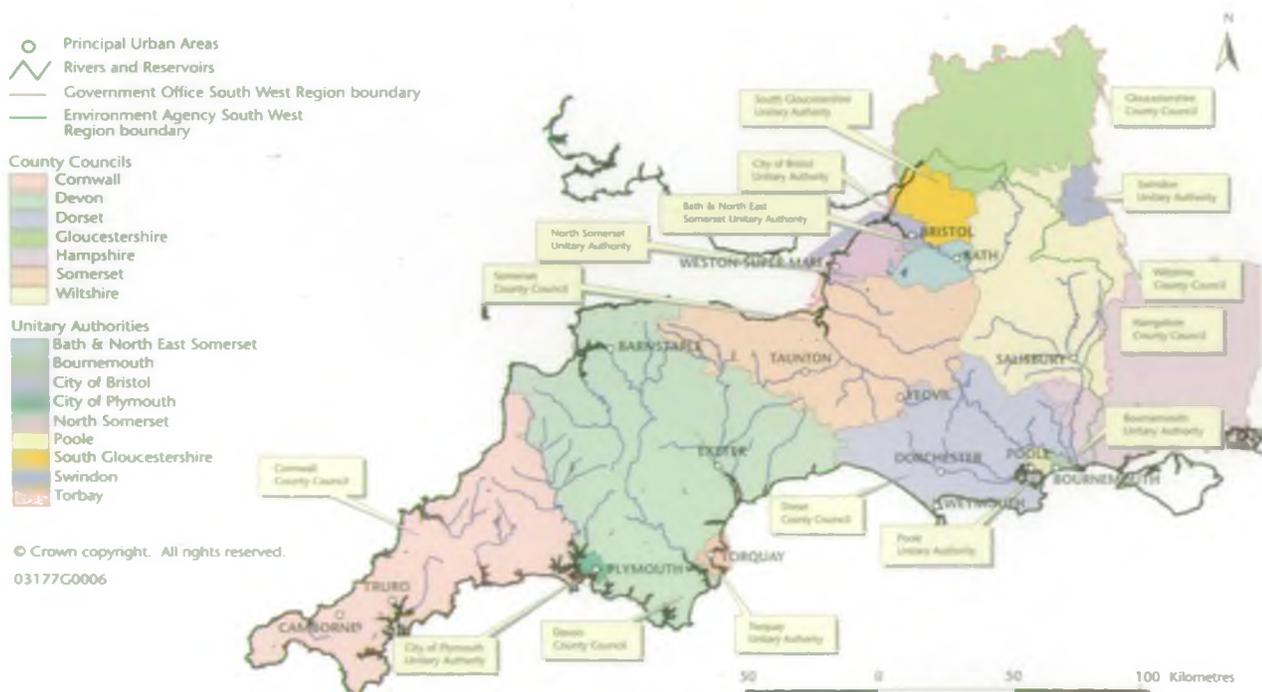
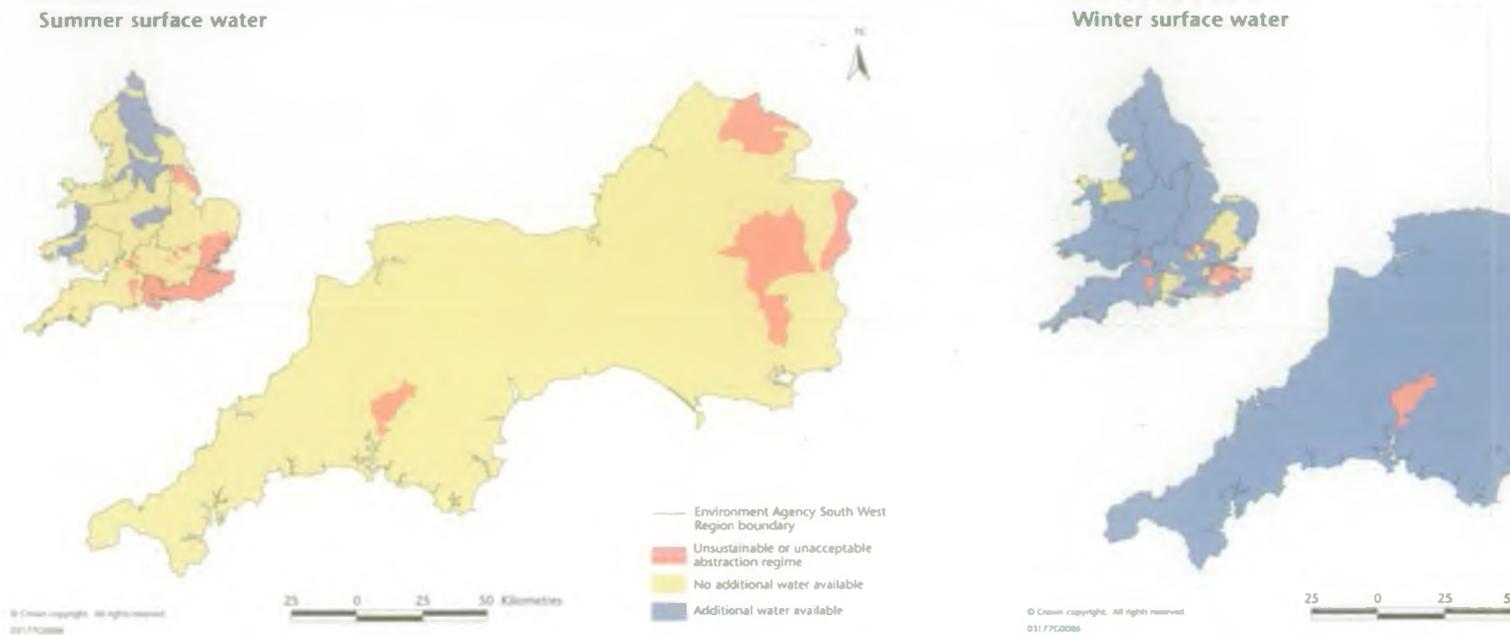


Figure 2 Current indicative availability



South Coast at Christchurch in Hampshire. Landscape features include the gorges of the Mendip Hills, the chalk downlands of Wiltshire and Dorset, the moorlands of Cornwall and Devon and the ancient woodlands and wetlands of the Tamar valley. The total area of the region is over 20,000 km². Many of our larger towns and cities lie along the coast.

Planning our use of water

In an average year, the South West Region receives enough rain to cover the entire land area to a depth of just over 1,000 mm. More rain falls on the high ground in Cornwall and Devon, and less in the east and north of the region. Some of this rainfall is taken up by trees, crops and other growing plants, and some evaporates. The remainder, known as effective rainfall, amounts to about 7,500 litres each day (about 750 buckets) for every person who lives in the Region. Effective rainfall is unevenly spread through the year, with much of it occurring during the winter months. We can't use all this water, because we want to leave enough in our rivers and streams to protect nature and allow us to enjoy our landscape. In a dry year, our use of water can lead to problems. Every drop of water that we take comes from our natural environment. We need to plan our use of water to make sure that we have enough for our needs while protecting plants and animals from damage.

Our strategy reflects these issues. It looks 25 years ahead, and considers the many changes that may occur over this time. Our vision is:

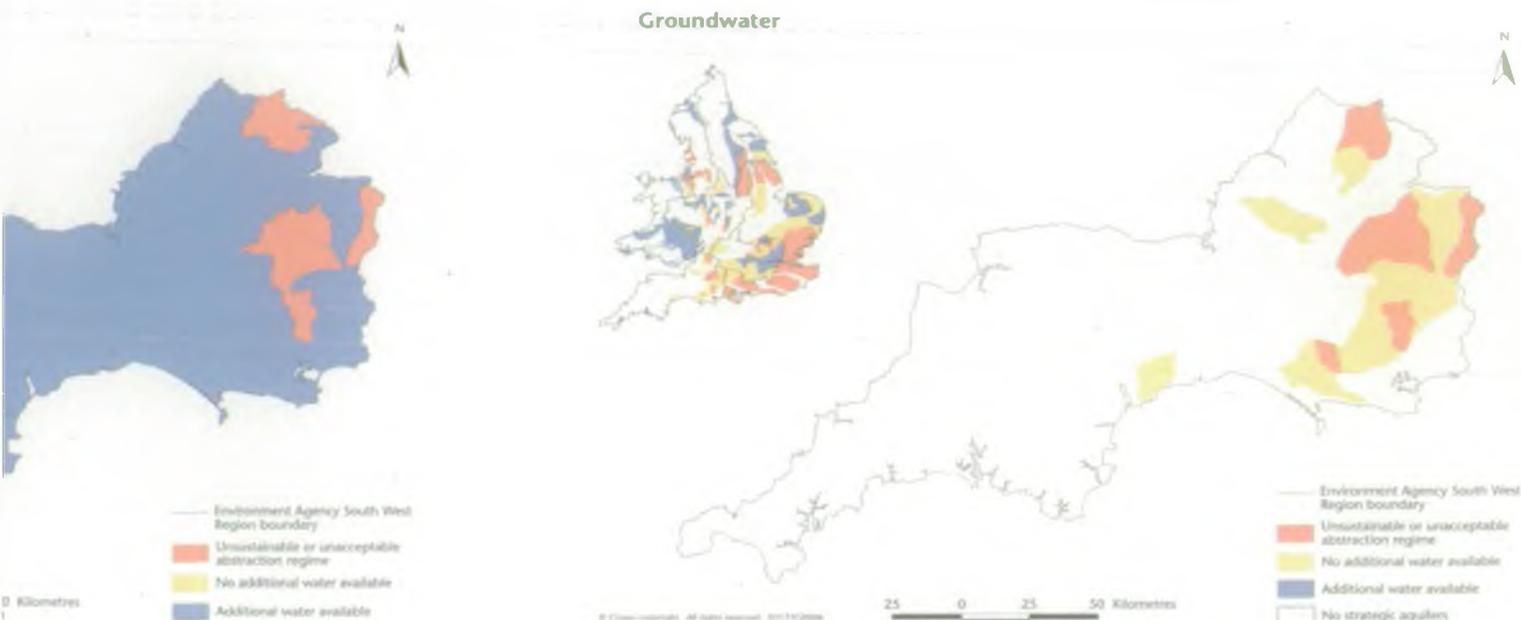
Enough water for all human uses with an improved water environment.

The availability of water

Water is taken from most of the rivers, streams and aquifers in the South West Region. There are many public supply reservoirs in the region, which fill during sustained wet weather, and store water for use in dry periods when river flows are low. The larger of these are Chew, Colliford, Roadford and Wimbleball reservoirs. Our main aquifers include the Chalk and Upper Greensand of Wiltshire and Dorset, the Jurassic Limestone east of Bristol, the Carboniferous Limestone of the Mendips and the Triassic Sandstone of the Otter Valley.

In 1997/98, we abstracted some 1,330 million litres of water per day (Ml/d) for public supply. Household use accounted for about half of this, and non-household use less than a third. In addition, industries abstracted some 60 Ml/d directly for their own use, and farmers a further 12 Ml/d for spray irrigation. Although the quantity for spray irrigation is small compared to other uses, demand for it is concentrated in the summer when river flows are at their lowest.

In some places we think that too much water is taken already. In these places, the environment may already be damaged, or is in danger of being damaged. If we want to restore the environment in these places we must stop taking so much water. In some other places, we think that there is no damage now, but that no more water should be taken. In other parts of the Region water may be available. Anyone who wants to take water needs a licence from the Environment Agency. Before we issue a licence, we must be sure that it will not harm the environment. Detailed studies are often necessary.



The maps in Figure 2 illustrate the availability of water across our Region, taking account of environmental needs. They show that there is little summer surface water available for abstraction. In addition, there are no groundwater resources available for further large-scale development of the major aquifers. There is evidence of abstraction exceeding the sustainable limit in a number of areas such as the River Wylfe in the Wessex Chalk Basin aquifer and the River Tavy in Devon. However, surface water is available in principle over most of the Region in winter, with some local exceptions.

Future demand for water

The amount of water we need is known as demand. The demand for water will change over the next 25 years, under the influences of a variety of factors.

In the home, we each choose how much water we use. We need water for washing, bathing and cooking, to water our gardens, and to wash our cars. Today, on average we each use about 155 litres every day – enough to fill about 15 buckets. Future household water use depends on the choices we make as individuals and collectively as a society. For example, showering usually uses less water than a bath, but using a power shower for five minutes can use more water than taking a bath. Depending on attitudes, individual household water use could increase or decrease over the next 25 years. In some places, more homes are planned. While individually any new homes built could be more water-efficient, they will add to the total demand for water.

Similar arguments about the effect on demand of differing water use practices apply to industry, commerce and

agriculture. Their needs for water are also affected by market considerations such as the price commanded by different product or crop types.

To consider many of these different effects, we have taken a scenario approach to predict future demands. The Government's Foresight framework looks at the different ways that our political and social values could change over time; we have used it to consider a range of possible social and economic changes, and calculated the resulting future demands.

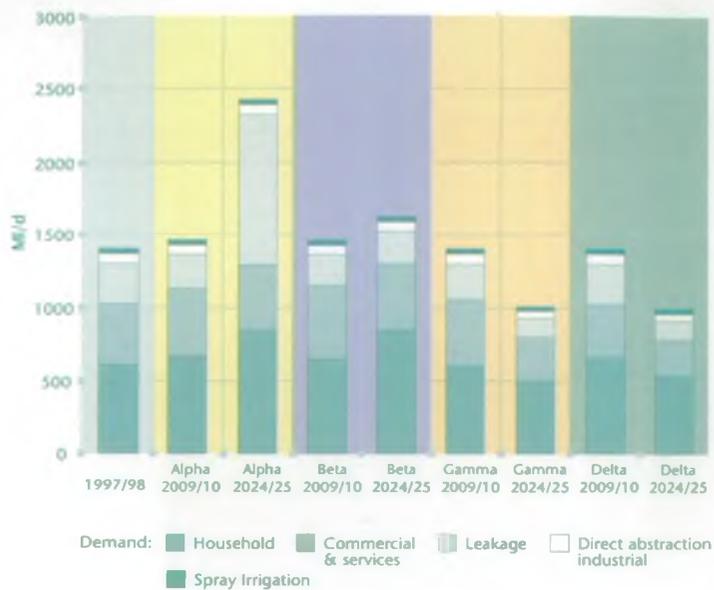
Current and likely future demands in the South West Region are dominated by public water supply. Government planners predict that household numbers and population in the region will increase by almost 400,000 and 600,000 respectively over the current planning period.

Figure 3 illustrates our demand forecasts for the South West Region to 2025. Each of these (Alpha, Beta, Gamma, Delta) is based on different political, economic and social values. The forecasts show that total demand for water could fall or rise over the next 25 years, depending to a great extent on the choices we make. We have developed a water resources strategy that is sufficiently flexible to accommodate the full range of our demand forecasts.

Climate change

Climate change is of great significance to water resources. Changes to rainfall patterns and amounts could affect how much water is available for people and for the environment. Climate change could also influence people's demand for water. For example, if it becomes hotter, we may wish to water our gardens more.

Figure 3 South West Region components of total demand



Present analysis suggests that over the next 25 years, summers could become drier and winters wetter, with more rain in total. Temperatures are likely to increase. Since many questions remain about the effects of climate change, it makes sense to use our existing water resources carefully, and to look for flexible solutions to future demands that can cope with different climatic conditions. This is an area that we will keep under review.

Our strategy

Our strategy is designed to improve the environment, while allowing enough water for human uses. We have developed our strategy in line with the principles of sustainable development, including social progress that addresses the needs of all, protection of the environment, making wise use of natural resources, and maintenance of high and stable levels of economic growth and employment. Our strategy is flexible and phased, so that we can avoid unnecessary investment while retaining the security of our water supply and improving the water environment.

Our strategy concludes that:

- in parts of the Region, water can be a scarce resource. In some places, environmental improvements are necessary. We will work to provide the water for these improvements;

- continued availability of a reliable public water supply is essential. We recommend the enhancement of supply by about 5 per cent over the next 25 years by improving existing schemes and developing some new resources;
- water efficiency should be actively promoted;
- over the next 25 years we should expect household water metering to become widespread, in the context of the Government's broader social and environmental policies including the protection of vulnerable households;
- continued progress in leakage control will be necessary;
- agriculture must focus on using available water to best effect;
- commerce and industry should pay increasing attention to water efficiency.

To make our strategy successful, we will need to work with many other groups and individuals. Together, we can ensure that there is enough water, both for people to use and to improve the environment.

We will publish an annual bulletin reporting on progress against this strategy, and review it fully in a few years' time.

How to find out more

You can find more information in the full water resources strategy for the South West Region, available from our Exeter address. Copies of the national water resources strategy for the whole of England and Wales and each of the regional strategies or summary leaflets are also available from this address. Alternatively, the relevant regional Environment Agency office can provide further details of their regional strategy. Copies of the national water resources strategy and leaflet can also be obtained from Water Resources, Environment Agency, Rio House, Waterside Drive, Aztec West, Almondsbury, Bristol, BS32 4UD. Further information on all of our water resources activities can be found on the Agency's website at www.environment-agency.gov.uk.



SOUTH WEST REGION ADDRESSES

REGIONAL OFFICE
 Environment Agency
 South West Region
 Manley House
 Kestrel Way
 Exeter EX2 7LQ
 Tel: 01392 444 000
 Fax: 01392 444 238

NORTH WESSEX AREA OFFICE
 Environment Agency
 Rivers House
 East Quay
 Bridgwater TA6 4YS
 Tel: 01278 457 333
 Fax: 01278 452 985

DEVON AREA OFFICE
 Environment Agency
 Exminster House
 Miller Way
 Exminster
 Devon EX6 8AS
 Tel: 01392 444 000
 Fax: 01392 316 016

CORNWALL AREA OFFICE
 Environment Agency
 Sir John Moore House
 Victoria Square
 Bodmin PL31 1EB
 Tel: 01208 78301
 Fax: 01208 78321

SOUTH WESSEX AREA OFFICE
 Environment Agency
 Rivers House
 Sunrise Business Park
 Higher Shaftesbury Road
 Blandford DT11 8ST
 Tel: 01258 456 080
 Fax: 01258 455 998



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 GENERAL ENQUIRY LINE
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